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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/590,027	06/07/2000	Steven R. Kleiman	103.1037.01	8740

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EXAMINER	
NGUYEN, CHAU T	

ART UNIT	PAPER NUMBER
2176	

DATE MAILED: 03/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/590,027	KLEIMAN, STEVEN R.	
	Examiner	Art Unit	
	Chau Nguyen	2176	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10 and 12-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10 and 12-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Amendment, received on 11/15/2004, has been entered.. Claims 1-8, 10 and 12-26 are presented for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-8, 10 and 12-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldrian et al. (Goldrian), U.S. Patent No. 6,026,448, Brock et al. (Brock), U.S. Patent No. 6,499,028, and further in view of Massa et al. (Massa), US. Patent No. 6,658,469.

4. As to claim 1, Goldrian discloses a method including steps of:

sending data between a client and a server using at least one of plural data buffer both in said client and in said server (Abstract and col. 2, line 58 – col. 3, line 25

and col. 11, lines 23-47: a message request is transferred from the request area of the originator buffer (client buffer) to the request area of the recipient buffer (server buffer))

However, Goldrian does not explicitly disclose plural data buffers of different sizes, at least some of said data buffers matched to sizes of data blocks to be transferred into or out of those data buffers; and wherein said step of sending selects one or more of said data buffers fro a data transfer responsive to a size of data blocks for said data transfer. Brock discloses a computer system includes a local node (client) is connected with one or more remote nodes (servers); the computer system contemplates a non-uniform memory architecture (NUMA) which performs incoming transactions and outgoing transactions between the local node and the remote nodes (Fig. 1, col. 6, line 37 – col. 7, line 31). Brock also discloses physical address space includes a plurality of memory region, and each is divided into a plurality of memory blocks, and data transaction matched in the corresponding region or memory block sizes (col. 3, lines 40-67 and col. 11, line 35 – col. 12, line 56). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Brock and Goldrian to include plural data buffers of different sizes, at least some of said data buffers matched to sizes of data blocks to be transferred into or out of those data buffers; and wherein said step of sending selects one or more of said data buffers fro a data transfer responsive to a size of data blocks for said data transfer. Due to variations in memory architecture implementation, page mechanism, caching policies, tuning or optimizing of any given NUMA system is most efficiently achieved with empirically gathered memory transaction data.

However, Goldrian and Brock do not explicitly disclose at least some of data buffers both in said client and in said server matched to sizes of data blocks. Massa discloses a data transfer between two applications 132 (client) and 136 (server), the client includes a switch 120 which associates a set of receive buffers 124 and send buffers 140 with the connection and sends a message 123 to the remote switch 126 of the server (col. 11, lines 10-20 and Fig. 5). Massa also discloses in col. 12, lines 1-59 and Fig. 6: the switch 126 in application 136 (server) sends an initial message, which includes information to indicate the size of the data to be transferred, to switch 120 in application 132 (client), then the switch 120 determines if the size of the receive buffers 134 in the client is large enough, and if it is then the switch 126 transfers an amount of data equal to the size of the receive buffers 134, and the switch 126 continues to transfer data into the receiving buffers 134 until all of the data is transferred. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Massa and Goldrian and Brock to include at least some of data buffers both in said client and in said server matched to sizes of data blocks to provide higher performance and to maximize the communication bandwidth and minimize the communication latency observed by the communicating applications.

5. As to claim 2, Goldrian, Brock and Massa disclose wherein a request or a response for said data transfer includes at least some control information (Brock, col. 9, lines 11-36: transactions present on interconnect network may include data and control information); and

said steps of sending data are responsive to said control information (Brock, col. 9, lines 11-36).

6. As to claim 3, Goldrian, Brock and Massa disclose wherein a request or a response for said data transfer includes at least one memory address (Brock, col. 9, lines 11-36: transactions include physical address (memory address));

said steps of sending data are responsive to said memory address, wherein said data is read from or written to a memory in response to said memory address (Brock, col. 9, line 11-36: physical address includes transaction types field indicating read/write transaction).

7. As to claim 4, Goldrian and Brock disclose a system including

a client and server (Goldrian, Abstract);

a NUMA communication link coupled to said client and server (Goldrian, col. 5, lines 12-16); and

plural data buffers both in said client and in said server for data transfers between said client and said server suing said NUMA communication link (Goldrian, Abstract and col. 2, line 58 – col. 3, line 25, col. 6, line 64 – col. 7, line 29, and col. 11, lines 23-47: a message request is transferred from the request area of the originator buffer (client buffer) to the request area of the recipient buffer (server buffer));

plural data buffers of different sizes for data transfers between said client and said server using said NUMA communication link, at least some of said data buffers

matched to sizes of data blocks to be transferred into or out of those data buffers ; wherein one or more of said data buffers is selected for a data transfer location responsive to a size of data blocks for said data transfer (Brock, Fig. 1, col. 3, lines 40-67, col. 6, line 37 – col. 7, line 31, and col. 11, line 35 – col. 12, line 56) (Brock, Fig. 1, col. 3, lines 40-67, col. 6, line 37 – col. 7, line 31, and col. 11, line 35 – col. 12, line 56: Brock discloses a computer system includes a local node (client) is connected with one or more remote nodes (servers); the computer system contemplates a non-uniform memory architecture (NUMA) which performs incoming transactions and outgoing transactions between the local node and the remote nodes (Fig. 1, col. 6, line 37 – col. 7, line 31). Brock also discloses physical address space includes a plurality of memory region, and each is divided into a plurality of memory blocks, and data transaction matched in the corresponding region or memory block sizes (col. 3, lines 40-67 and col. 11, line 35 – col. 12, line 56). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Brock and Goldrian to include plural data buffers of different sizes, at least some of said data buffers matched to sizes of data blocks to be transferred into or out of those data buffers; and wherein said step of sending selects one or more of said data buffers fro a data transfer responsive to a size of data blocks for said data transfer. Due to variations in memory architecture implementation, page mechanism, caching policies, tuning or optimizing of any given NUMA system is most efficiently achieved with empirically gathered memory transaction data).

However, Goldrian and Brock do not explicitly disclose at least some of data buffers both in said client and in said server matched to sizes of data blocks. Massa discloses a data transfer between two applications 132 (client) and 136 (server), the client includes a switch 120 which associates a set of receive buffers 124 and send buffers 140 with the connection and sends a message 123 to the remote switch 126 of the server (col. 11, lines 10-20 and Fig. 5). Massa also discloses in col. 12, lines 1-59 and Fig. 6: the switch 126 in application 136 (server) sends an initial message, which includes information to indicate the size of the data to be transferred, to switch 120 in application 132 (client), then the switch 120 determines if the size of the receive buffers 134 in the client is large enough, and if it is then the switch 126 transfers an amount of data equal to the size of the receive buffers 134, and the switch 126 continues to transfer data into the receiving buffers 134 until all of the data is transferred. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Massa and Goldrian and Brock to include at least some of data buffers both in said client and in said server matched to sizes of data blocks to provide higher performance and to maximize the communication bandwidth and minimize the communication latency observed by the communicating applications.

8. As to claim 5, Goldrian, Brock and Massa disclose a byte serial communication link, wherein said data transfer also uses said byte serial communication link (Goldrian, col. 6, lines 3-14).

9. As to claim 6, Goldrian, Brock and Massa disclose wherein either said client or server performs processing of information in said data transfer;

said processing is performed in an order convenient to both said client and server (Goldrian, col. 1, lines 16-23); and

said order is decoupled from an order of said data transfer (Goldrian, col. 1, lines 16-23 and col. 2, line 58 – col. 3, line 25).

10. As to claim 7, Goldrian, Brock and Massa disclose wherein said data transfer is responsive to control information in a request or a response for said data transfer (Brock, col. 9, lines 11-36).

11. As to claim 8, Goldrian, Brock and Massa disclose wherein said data transfer is responsive to a request or a response for said data transfer (Goldrian, Abstract, col. 5, lines 12-16 and col. 7, lines 1-29).

12. As to claim 10, Goldrian, Brock and Massa disclose wherein said one or more data buffers also is selected responsive to control information in a request or a response for said data transfer (Brock, col. 9, lines 11-36).

13. As to claims 12, 21, and 25-26, Goldrian discloses a system including a server, said server having a memory including a client communication region and data transfer

region, said data transfer region having plural data buffers (Abstract and col. 2, line 58 – col. 3, line 25 and col. 11, lines 23-47);

a remote DMA communication link coupled to said data transfer region (Goldrian, Abstract, and col. 8, line 40 – col. 9, line 49) ;

wherein said client communication region includes information regarding a data transfer into or out of said data transfer region (Goldrian, Abstract, and col. 8, line 40 – col. 9, line 49);

However, Goldrian does not explicitly disclose data buffers of different sizes for data transfers to and from a client, at least some of said data buffers matched to different sizes of data blocks to be transferred into or out of those data buffers and matched to different sizes of data buffers in said client that are also matched to said different sizes of said data blocks to be transferred; and wherein one or more of said server data buffers is selected for a data transfer responsive to a size of data block for said transfer. Brock discloses a computer system includes a local node is connected with one or more remote nodes; the computer system contemplates a non-uniform memory architecture (NUMA) which performs incoming transactions and outgoing transactions between the local node and the remote nodes (Fig. 1, col. 6, line 37 – col. 7, line 31). Brock also discloses physical address space includes a plurality of memory region, and each is divided into a plurality of memory blocks, and data transaction matched in the corresponding region or memory block sizes (col. 3, lines 40-67 and col. 11, line 35 – col. 12, line 56). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Brock and

Goldrian to include plural data buffers of different sizes, at least some of said data buffers matched to sizes of data blocks to be transferred into or out of those data buffers; and wherein said step of sending selects one or more of said data buffers fro a data transfer responsive to a size of data blocks for said data transfer. Due to variations in memory architecture implementation, page mechanism, caching policies, tuning or optimizing of any given NUMA system is most efficiently achieved with empirically gathered memory transaction data.

However, Goldrian and Brock do not explicitly disclose at least some of data buffers both in said client and in said server matched to sizes of data blocks. Massa discloses a data transfer between two applications 132 (client) and 136 (server), the client includes a switch 120 which associates a set of receive buffers 124 and send buffers 140 with the connection and sends a message 123 to the remote switch 126 of the server (col. 11, lines 10-20 and Fig. 5). Massa also discloses in col. 12, lines 1-59 and Fig. 6: the switch 126 in application 136 (server) sends an initial message, which includes information to indicate the size of the data to be transferred, to switch 120 in application 132 (client), then the switch 120 determines if the size of the receive buffers 134 in the client is large enough, and if it is then the switch 126 transfers an amount of data equal to the size of the receive buffers 134, and the switch 126 continues to transfer data into the receiving buffers 134 until all of the data is transferred. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Massa and Goldrian and Brock to include at least some of data buffers both in said client and in said server matched to sizes of data blocks to

provide higher performance and to maximize the communication bandwidth and minimize the communication latency observed by the communicating applications.

14. As to claim 13, Goldrian, Brock and Massa disclose a byte serial communication link coupled to said client communication region (Goldrian, col. 6, lines 3-14).

15. As to claim 14, Goldrian, Brock and Massa disclose a processing element is said server coupled to said data transfer region, said processing element responsive to a request from a client or a response to a client (Goldrian, col. 9, line 64 – col. 10, line 5).

16. As to claim 15, Goldrian, Brock and Massa disclose a processing element in said server coupled to said data transfer region, said processing element responsive to control information in said client communication region (Goldrian, col. 9, line 64 – col. 10, line 5).

17. As to claims 16 and 22-23, Goldrian, Brock and Massa disclose a processing element in said server coupled to said data transfer region, said processing element using information if said data transfer region independently of said remote DMA communication link (Goldrian, col. 4, lines 1-26 and col. 9, line 64 – col. 10, line 5).

18. As to claim 17, Goldrian, Brock and Massa disclose a request from a client or a response to said client having information regarding a location within data transfer region (Brock, col. 9, line 11-36: physical address includes transaction types field indicating read/write transaction).

19. As to claim 18, Goldrian, Brock and Massa disclose wherein said client communication region stores a request from a client or a response to said client (Goldrian, col. 7, lines 1-29).

20. As to claim 19, Goldrian, Brock and Massa disclose wherein said data transfer region stores a data transfer to or from a client (Goldrian, Abstract, and col. 2, lines 26-57).

21. As to claim 20, Goldrian, Brock and Massa disclose wherein said remote DMA communication link includes a NUMA communication link (Goldrian, col. 4, lines 1-19 and col. 7, lines 15-29).

22. As to claim 24, Goldrian, Brock and Massa disclose wherein said client includes a database server (Goldrian, col. 4, lines 1-19).

Response of Arguments

Applicant's arguments and amendments filed on 11/15/2004 have been fully considered but they are not deemed fully persuasive. Applicant's arguments with respect to claims 1, 4, 12, 21, and 25-26 have been considered but are moot in view of the new ground(s) of rejection as explained above, necessitated by Applicant's substantial amendment (i.e., plural data buffers of different sizes both in said client and in said server, at least some of said data buffers both in said client and in said server matched to sizes of data blocks to be transferred into or out of those data buffers) to the claims which significantly affected the scope thereof.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chau Nguyen whose telephone number is (571) 272-4092. The examiner can normally be reached on 8:00 am – 5:00 pm Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild, can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chau Nguyen
Patent Examiner
Art Unit 2176

JOSEPH FEILD
SUPERVISORY PATENT EXAMINER